



SEQUENCE LISTING

<110> FANG, FANG
KOHLSTAEDT, LORI
RENO, JOHN

<120> HUMANIZED ANTIBODIES

<130> 014357/027 8772

<140> 09/910,483
<141> 2001-07-19

<160> 96

<170> PatentIn Ver. 2.1

<210> 1
<211> 116
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VH Domain peptide of Hum A

<400> 1

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Ile Lys Asp Thr
20 25 30

Tyr Ile His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Ala Arg Ile Asp Pro Ala Asn Asp Asn Thr Ile Tyr Ala Asp Ser Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Ser Asp Asp Ser Lys Asn Thr Ala Tyr
65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Thr Asp Ser Gly Tyr Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val
100 105 110

Thr Val Ser Ser
115

<210> 2
<211> 348
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VH nucleotide sequence of Hum A

<400> 2

| | | | | | | |
|-------------|-------------|------------|-------------|------------|------------|-----|
| gaagtcaac | tttgtgagtc | tggcgccgt | ctgggttcagc | cgggtggctc | tctgcgcctg | 60 |
| tcttgcgcag | caagcggtt | caacattaag | gacacctaca | tccattgggt | gaggcaagct | 120 |
| ccgggttaagg | gtctggagtg | ggtggcacgt | atcgaccgg | caaacgacaa | caccattac | 180 |
| gctgacagcg | tgaaggggccg | ttttactatt | tctagcgacg | actctaagaa | caccgcgtac | 240 |
| cttcagatga | actctctgcg | tgccgaggac | accggccgtct | actactgcac | ggactctggc | 300 |
| tactggtttgc | cctactgggg | ccagggcacg | cttgtcacccg | tctttct | | 348 |

<210> 3

<211> 108

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VL Domain peptide of Hum A

<400> 3

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ile | Gln | Met | Thr | Gln | Ser | Pro | Ser | Ser | Leu | Ser | Ala | Ser | Val | Gly |
| 1 | | | | | | | | | | | | | | 15 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Arg | Val | Thr | Ile | Thr | Cys | Arg | Ala | Ser | Gln | Ser | Ile | Ser | Asn | Asn |
| | | | | | | | | | | | | | | 30 | |
| | | | | 20 | | | | 25 | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | His | Trp | Tyr | Gln | Gln | Lys | Pro | Gly | Lys | Ala | Pro | Lys | Leu | Leu | Ile |
| | | | | | | | | | | | | | | 45 | |
| | | | | 35 | | 40 | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tyr | His | Ala | Ser | Gln | Ser | Ile | Ser | Gly | Val | Pro | Ser | Arg | Phe | Ser | Gly |
| | | | | | | | | | | | | | | 60 | |
| | | | | 50 | | 55 | | | | | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Gly | Ser | Gly | Thr | Asp | Phe | Thr | Leu | Thr | Ile | Ser | Ser | Leu | Gln | Pro |
| | | | | | | | | | | | | | | 80 | |
| | | | | 65 | | 70 | | | | 75 | | | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Asp | Phe | Ala | Thr | Tyr | Tyr | Cys | Gln | Gln | Ser | Asn | Ser | Trp | Pro | Tyr |
| | | | | | | | | | | | | | | 95 | |
| | | | | 85 | | | | 90 | | | | | | | |

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|
| Thr | Phe | Gly | Gln | Gly | Thr | Lys | Val | Glu | Ile | Lys | Arg | | | |
| | | | | | | | | | | | | | | |
| | | | | 100 | | | 105 | | | | | | | |

<210> 4

<211> 324

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VL nucleotide sequence of Hum A

<400> 4

| | | | | | | |
|------------|-------------|------------|------------|------------|-------------|-----|
| gatatccaga | tgacccaatc | tccgtctagc | ctgagcgcca | gtgttggtga | tcgagttacc | 60 |
| attacttgcc | gcgccagcca | atctatcagt | aataatcttc | actgttatca | acaaaaacccg | 120 |
| ggtaaagctc | cgaaaacttct | tatctatcac | gcctctcaga | gcattagcgg | cgttccgagc | 180 |

cgcttctctg gctctggctc gggcacggac tttaccctta ccatcagetc tcttcagccg 240
 gaagactttg ccacctatta ttgtcagcag tctaatacg 300
 ggtaccaagg tcgagattaa gcgc 324

<210> 5
<211> 116
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic VH Domain
 peptide of Hum B

<400> 5
 Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Ile Lys Asp Thr
 20 25 30

Tyr Ile His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Ala Arg Ile Asp Pro Ala Asn Asp Asn Thr Ile Tyr Ala Asp Ser Val
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Ser Asp Asp Ser Lys Asn Thr Ala Tyr
 65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

Thr Ala Ser Gly Tyr Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val
 100 105 110

Thr Val Ser Ser
 115

<210> 6
<211> 348
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic VH nucleotide
 sequence of Hum B

<400> 6
 gaagttcaac ttgttgagtc tggtggcggt ctgggtcagc cgggtggctc tctgcgcctg 60
 tcttgcgcag caagcggtt caacattaag gacacctaca tccattgggt gaggcaagct 120
 cgggttaagg gtctggagtg ggtggcacgt atcgacccgg caaacgacaa caccattac 180
 gctgacagcg tgaaggggccg ttttactatt tctagcgacg actctaagaa caccgcgtac 240
 cttcagatga actctctgcg tgccgaggac accgcccgtct actactgcac ggcctctggc 300
 tactggtttg cctactgggg ccagggcacg cttgtcacccg tctttct 348

<210> 7
<211> 108
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic VL Domain peptide of Hum B

<400> 7
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Asn Asn
20 25 30

Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Tyr His Ala Ser Gln Ser Ile Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Asn Ser Trp Pro Tyr
85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
100 105

<210> 8
<211> 324
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic VL nucleotide sequence of Hum B

<400> 8
gatatccaga tgacccaatc tccgtctagc ctgagcgcca gtgttggta tcgagttacc 60
attacttgcc ggcgcaggca atctatcagt aataatctc actgttatca aaaaaaccg 120
ggtaaagctc cgaaaacttct tatctatcac gcctctcaga gcattagcg 180
cgcttctctg gctctggctc gggcacggac ttaccctta ccatcagctc tcttcagccg 240
gaagactttg ccacctatta ttgtcagcag tctaatacg 300
ggtaccaagg tcgagattaa gcgc 324

<210> 9
<211> 116
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic VH Domain peptide of Hum C

<400> 9
 Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15
 Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Ile Lys Asp Thr
 20 25 30
 Tyr Ile His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45
 Ala Arg Ile Asp Pro Ala Asn Asp Asn Thr Ile Tyr Ala Asp Ser Val
 50 55 60
 Lys Gly Arg Phe Thr Ile Ser Gly Asp Asp Ser Lys Asn Thr Ala Tyr
 65 70 75 80
 Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95
 Thr Thr Ser Gly Tyr Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val
 100 105 110
 Thr Val Ser Ser
 115

<210> 10
<211> 348
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic VH nucleotide sequence of Hum C

<400> 10
gaagttcaac ttgttgagtc tgggtggcggt ctgggtcagc cgggtggctc tctgcgcctg 60
tcttgcgcag caagcggtt caacattaag gacacctaca tccattgggt gaggcaagct 120
ccgggttaagg gtctggagtg ggtggcacgt atcgaccgg caaacgacaa caccattac 180
gctgacagcg tgaagggccg ttttactatt tctggcgacg actctaagaa caccgcgtac 240
cttcagatga actctctgcg tgccgaggac accgcccgtct actactgcac gacctctggc 300
tactggtttgc cctactgggg ccagggcacg cttgtcacccg tctttct 348

<210> 11
<211> 108
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic VL Domain peptide of Hum C

<400> 11
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Asn Asn
 20 25 30

 Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
 35 40 45

 Tyr His Ala Ser Gln Ser Ile Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

 Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80

 Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Asn Ser Trp Pro Tyr
 85 90 95

 Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
 100 105

<210> 12
 <211> 324
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic VL nucleotide
 sequence of Hum C

<400> 12
 gatatccaga tgacccaatc tccgtctagc ctgagcgcca gtgtggta tcgagttacc 60
 attacttgcc gcgccagcca atctatcagt aataatcttc actgttatca aaaaaaaccg 120
 ggtaaagctc cgaaaacttct tatctatcac gcctctcaga gcattagcg 180
 cgcttctctg gctctggctc gggcacggac ttaccctta ccatcagctc tcttcagccg 240
 gaagactttg ccacctatta ttgtcagcag tctaatacg 300
 ggtaccaagg tcgagattaa gcgc 324

<210> 13
 <211> 116
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: Synthetic VH Domain
 peptide of Hum D

<400> 13
 Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Ile Lys Asp Thr
 20 25 30

 Tyr Ile His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

 Ala Arg Ile Asp Pro Ala Asn Asp Asn Thr Ile Tyr Ala Asp Ser Val
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Ser Asp Asp Ser Lys Asn Thr Ala Tyr
 65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

Thr Thr Ser Gly Tyr Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val
 100 105 110

Thr Val Ser Ser
 115

<210> 14

<211> 348

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VH nucleotide sequence of Hum D

<400> 14

gaagttcaac ttgttgagtc tggtggcggt ctggttcagc cgggtggctc tctgcgcctg 60
 tcttgcgcag caagcggttt caacattaag gacacctaca tccattgggt gaggcaagct 120
 ccgggttaagg gtctggagtg ggtggcacgt atcgaccctgg caaacgacaa caccattac 180
 gctgacagcg tgaagggcccgttacttatt tctagcgacg actctaagaa caccgcgtac 240
 cttcagatga actctctgctg 300
 tactggtttg cctactgggg ccagggcacg cttgtcacccg tcttttgc 348

<210> 15

<211> 108

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VL Domain peptide of Hum C

<400> 15

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Asn Asn
 20 25 30

Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
 35 40 45

Tyr His Ala Ser Gln Ser Ile Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Asn Ser Trp Pro Tyr
 85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
 100 105

<210> 16
<211> 324
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic VL nucleotide sequence of Hum D

<400> 16
gatatccaga tgacccaatc tccgtctagc ctgagcgcca gtgtggta tcgagttacc 60
attacttgcc gcgccagcca atctatcagt aataatcttc actgttatca aaaaaaaccg 120
ggtaaagctc cgaaaccttct tatctatcac gcctctcaga gcattagcgg cgttccgagc 180
cgcttctctg gctctggctc gggcacggac tttaccctta ccatacagctc tcttcagccg 240
gaagactttg ccacctatta ttgtcagcag tctaatacg 300
gttaccaagg tcgagattaa gcgc 324

<210> 17
<211> 116
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic VH Domain peptide of Hum E

<400> 17
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Ile Lys Asp Thr
 20 25 30

Tyr Ile His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Ala Arg Ile Asp Pro Ala Asn Asp Asn Thr Ile Tyr Asp Pro Lys Val
 50 55 60

Gln Gly Arg Phe Thr Ile Ser Ala Asp Asp Ser Lys Asn Thr Ala Tyr
 65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

Thr Thr Ser Gly Tyr Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val
 100 105 110

Thr Val Ser Ser
 115

<210> 18
<211> 348
<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VH nucleotide sequence of Hum E

<400> 18

gaagttcaac ttgttgagtc tggtggcggt ctggttcagc cgggtggctc tctgcgcctg 60
tcttgcgcag caagcggttt caacattaag gacacctaca tccattgggt gaggcaagct 120
ccgggttaagg gtctggagtg ggtggcacgt atcgaccggg caaacgacaa caccattac 180
gatccgaagg tgcagggccg tttactatt tctgcggacg actctaagaa caccgcgtac 240
cttcagatga actctctgcg tgccgaggac accgcccgtct actactgcac gacctctggc 300
tactggtttg cctactgggg ccagggcacg cttgtcaccc tctttct 348

<210> 19

<211> 108

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VL Domain peptide of Hum E

<400> 19

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ile | Gln | Met | Thr | Gln | Ser | Pro | Ser | Ser | Leu | Ser | Ala | Ser | Val | Gly |
| 1 | | | | | | | | | | | | | | 10 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Arg | Val | Thr | Ile | Thr | Cys | Arg | Ala | Ser | Gln | Ser | Ile | Ser | Asn | Asn |
| | | | | | | | | | | | | | | 20 | 25 |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | His | Trp | Tyr | Gln | Gln | Lys | Pro | Gly | Lys | Ala | Pro | Lys | Leu | Leu | Ile |
| | | | | | | | | | | | | | | 35 | 40 |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tyr | His | Ala | Ser | Gln | Ser | Ile | Ser | Gly | Val | Pro | Ser | Arg | Phe | Ser | Gly |
| | | | | | | | | | | | | | | 50 | 55 |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Gly | Ser | Gly | Thr | Asp | Phe | Thr | Leu | Thr | Ile | Ser | Ser | Leu | Gln | Pro |
| | | | | | | | | | | | | | | 65 | 70 |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Asp | Phe | Ala | Thr | Tyr | Tyr | Cys | Gln | Gln | Ser | Asn | Ser | Trp | Pro | Tyr |
| | | | | | | | | | | | | | | 85 | 90 |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|-----|-----|
| Thr | Phe | Gly | Gln | Gly | Thr | Lys | Val | Glu | Ile | Lys | Arg | | | | |
| | | | | | | | | | | | | | | 100 | 105 |

<210> 20
<211> 324
<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VL nucleotide sequence of Hum E

<400> 20

gatatccaga tgacccaatc tccgtcttagc ctgagcgcca gtgttggta tcgagttacc 60
 attacttgcc gcgccagcca atctatcagt aataatcttc actggtatca acaaaaacctg 120
 ggtaaagctc cggaaacttct tatctatcac gcctctcaga gcattagcgg cgttccgagg 180
 cgcttctctg gctctggctc gggcacggac ttaccctta ccattcagctc tttcagccg 240
 gaagactttg ccacctatta ttgtcagcag tctaatacg 300
 ggtaccaagg tcgagattaa gcgc 324

<210> 21

<211> 116

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VH Domain peptide of Hum F

<400> 21

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Val | Gln | Leu | Val | Glu | Ser | Gly | Gly | Gly | Leu | Val | Gln | Pro | Gly | Gly |
| 1 | | | | 5 | | | | | | 10 | | | | 15 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Leu | Arg | Leu | Ser | Cys | Ala | Ala | Ser | Gly | Phe | Asn | Ile | Lys | Asp | Thr |
| | | | | | | | | 20 | | | | 25 | | 30 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Tyr | Ile | His | Trp | Val | Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu | Glu | Trp | Val |
| | | | | | | | | 35 | | 40 | | 45 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Arg | Ile | Asp | Pro | Ala | Asn | Asp | Asn | Thr | Ile | Tyr | Ala | Asp | Ser | Val |
| | | | | | | | | 50 | | 55 | | 60 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Gly | Arg | Phe | Thr | Ile | Ser | Ala | Asp | Asp | Ser | Lys | Asn | Thr | Ala | Tyr |
| | | | | | | | | 65 | | 70 | | 75 | | 80 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Gln | Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp | Thr | Ala | Val | Tyr | Tyr | Cys |
| | | | | | | | | 85 | | 90 | | | 95 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Thr | Thr | Ser | Gly | Tyr | Trp | Phe | Ala | Tyr | Trp | Gly | Gln | Gly | Thr | Leu | Val |
| | | | | | | | | 100 | | 105 | | 110 | | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|--|--|--|--|--|--|--|--|--|--|--|--|
| Thr | Val | Ser | Ser | | | | | | | | | | | | |
| | | | 115 | | | | | | | | | | | | |

<210> 22

<211> 348

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VH nucleotide sequence of Hum F

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<400> 22
gaagttcaac ttgttgagtc tggggcggt ctggttcagc cgggtggctc tctgcgcctg 60
tcttcgcgcag caaggcggtt caacattaag gacacccatac tcattgggtt gaggcaagct 120
ccgggttaagg gtctggagtg ggtggcacgt atcgaccggg caaacgacaa caccattac 180
gctgacacgct tgaaggggccg ttttactatt tctgcggacg actctaagaa caccgcgtac 240
cttcagatga actctctgcg tgccgaggac accgcccgtct actactgcac gacctctggc 300
tactggtttgc cctactgggg ccaggccacg cttgtcaccq tctttct 348

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<210> 23
<211> 108
<212> PRT
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Synthetic VL Domain
peptide of Hum F

<400> 23
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Asn Asn
20 25 30

Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Tyr His Ala Ser Gln Ser Ile Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Asn Ser Trp Pro Tyr
85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
100 105

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<210> 24
<211> 324
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Synthetic VL nucleotide
sequence of Hum F

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<400> 24
gatatccaga tgacccaatac tccgtctagc ctgagcgcca gtgttggta tcgagttacc 60
attacttgcc ggcgcaggca atctatcagt aataatctc actgttatca aaaaaaaaa 120
ggtaaaagctc cgaaaacttct tatctatcac gcctctcaga gcattagcgg cgttccgagc 180
cgcttctctg gctctggctc gggcacggac ttaccctta ccatcagctc tcttcagccg 240
gaagactttg ccacctatta ttgtcagcag tctaatacg  ggccgtatac cttcggtaa 300
ggtaccaagg tcgaaqattaa qcqc 324
```

<210> 25
<211> 116
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic VH Domain peptide of Hum G

<400> 25
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Ile Lys Asp Thr
20 25 30

Tyr Ile His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Ala Arg Ile Asp Pro Ala Asn Asp Asn Thr Ile Tyr Ala Asp Ser Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Ala Asp Asp Ser Lys Asn Thr Ala Tyr
65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Thr Thr Ser Gly Tyr Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val
100 105 110

Thr Val Ser Ser
115

<210> 26
<211> 348
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic VH nucleotide sequence of Hum G

<400> 26
gaagttcaac ttgttgagtc tggtgtgcggc ctgggttcagc cgggtggctc tctgcgcctg
tcttgcgccag caagcggtt caacattaag gacacctaca tccattgggt gaggcaagct
ccgggttaagg gtctggagtg ggtggcacgt atcgaccggg caaacgacaa caccattttac
gctgacacgca tgaaggggccg ttttactatt tctgcggacg actctaagaa caccgcgtac
cttcagatga actctctgcg tgccgaggac accggccgtct actactgcac gacctctggc
tactgggttg cctactgggg ccagggcaca cttgtcacccg tctttct

<210> 27
<211> 108
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic VL Domain
peptide of Hum G

<400> 27
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Asn Asn
20 25 30

Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45

Lys His Ala Ser Gln Ser Ile Ser Gly Val Pro Ser Arg Phe Ser Gly
50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Asn Ser Trp Pro Tyr
85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
100 105

<210> 28
<211> 324
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic VL nucleotide
sequence of Hum G

<400> 28
gatatccaga tgacccaatc tccgtctagc ctgagcgcca gtgttggta tcgagttacc 60
attacttgcc gcgccagcca atctatcagt aataatcttc actggtatca aaaaaaaccg 120
ggtaaaagctc cgaaaacttct tatcaaacac gcctctcaga gcattagcgg cgttccgagc 180
cgcttctctg gctctggctc gggcacggac tttaccctta ccatcagctc tcttcagccg 240
gaagactttg ccacctatta ttgtcagcag tctaatacg 300
ggtaccaagg tcgagattaa gcgc 324

<210> 29
<211> 116
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic VH Domain
peptide of Hum H

<400> 29
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Ile Lys Asp Thr
 20 25 30

Tyr Ile His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Ala Arg Ile Asp Pro Ala Asn Asp Asn Thr Ile Tyr Asp Pro Lys Val
 50 55 60

Gln Gly Arg Phe Thr Ile Ser Ala Asp Asp Ser Lys Asn Thr Ala Tyr
 65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

Thr Thr Ser Gly Tyr Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val
 100 105 110

Thr Val Ser Ser
 115

<210> 30

<211> 348

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VH nucleotide sequence of Hum H

<400> 30

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gaagttcaac ttgttgagtc tggtggcggt ctgggtcagc cgggtggctc tctgcgcctg 60
tcttgcgcag caagcggtt caacattaag gacacccatac tccattgggt gaggcaagct 120
ccgggtaagg gtctggagtg ggtggcacgt atcgaccggg caaacgcacaa caccattac 180
gatccgaagg tgcaaggccg ttttactatt tctgcggacg actctaagaa caccgcgtac 240
cttcagatga actctctgcg tgccgaggac accgcgtct actactgcac gacctctggc 300
tactggtttgc cctactgggg ccagggcacg cttgtcacccg tctttct 348
```

<210> 31

<211> 108

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VL Domain peptide of Hum H

<400> 31

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Asn Asn
20 25 30

Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
 35 40 45

Lys His Ala Ser Gln Ser Ile Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Asn Ser Trp Pro Tyr
 85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
 100 105

<210> 32

<211> 324

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VL nucleotide sequence of Hum H

<400> 32

gatatatccaga tgacccaatc tccgtctagc ctgagcgcca gtgttggta tcgagttacc 60
 attacttgcc gcgccagcca atctatcagt aataatcttc actgttatca aaaaaaaccg 120
 ggttaaagctc cgaaaccttct tatcaaacac gcctctcaga gcattagcgg cgttccgagc 180
 cgcttctctg gctctggctc gggcacggac tttaccctta ccatcagctc tcttcagccg 240
 gaagactttg ccacctatta ttgtcagcag tctaatacg 300
 ggtaccaagg tcgagattaa gcgc 324

<210> 33

<211> 116

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VH Domain peptide of Hum I

<400> 33

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Ile Lys Asp Thr
 20 25 30

Tyr Ile His Trp Met Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Ala Arg Ile Asp Pro Ala Asn Asp Asn Thr Ile Tyr Asp Pro Lys Val
 50 55 60

Gln Gly Arg Phe Thr Met Ser Ala Asp Thr Ser Lys Asn Thr Ala Tyr
 65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

Thr Thr Ser Gly Tyr Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val
 100 105 110

Thr Val Ser Ser
 115

<210> 34

<211> 348

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VH nucleotide sequence of Hum I

<400> 34

gaagttcaac ttgttgagtc tggtggcggt ctggttcagc cgggtggctc tctgcgcctg 60
 tcttgcgcag caagcggtt caacattaag gacacctaca tccattggat gaggcaagct 120
 ccgggttaagg gtctggagtg ggtggcacgt atcgaccggg caaacgacaa caccattac 180
 gatccgaagg tgcagggccg tttactatg tctgcggacg actctaagaa caccgcgtac 240
 cttcagatga actctctgcg tgccgaggac accgcccgtct actactgcac gacctctggc 300
 tactggtttgc cctactgggg ccagggcacg cttgtcacccg tctttct 348

<210> 35

<211> 108

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic VL Domain peptide of Hum I

<400> 35

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Asn Asn
 20 25 30

Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
 35 40 45

Lys His Ala Ser Gln Ser Ile Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Asn Ser Trp Pro Tyr
 85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
.....
100 105

```
<210> 36
<211> 324
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Synthetic VL nucleotide
sequence of Hum I

```
<400> 36
gatatccaga tgacccaatc tccgtcttagc ctgagcgcca gtgttggta tcgagttacc 60
attacttgcc ggcgcagcca atctatcagt aataatcttc actggtatca acaaaaacccg 120
ggtaaaagctc cggaaacttct tatcaaacac gcctctcaga gcattagcgg cgttccggc 180
cgcttctctg gctctggctc gggcacggac tttaccctta ccatcagctc tcttcagccg 240
gaagactttg ccaccttatta ttgtcagcag tctaatacg tggccgtatac cttcggtcaa 300
ggtaccaagg tcgagattaa gcgc 324
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<210> 37
<211> 116
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Murine 1A6 VH Domain
consensus sequence of Heavy Chain Subgroup III (Humiii)

<400> 37
Glu Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Lys Pro Gly Ala
1 5 10 15

Ser Leu Lys Leu Ser Cys Thr Ala Ser Gly Phe Asn Ile Lys Asp Thr
 20 25 30

Tyr Ile His Trp Met Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp Ile
35 40 45

Gly Arg Ile Asp Pro Ala Asn Asp Asn Thr Ile Tyr Asp Pro Lys Val
50 55 60

Gln Gly Lys Ala Thr Met Thr Ala Asp Thr Ser Ser Asn Thr Ala Tyr
65 70 75 80

Leu Gln Leu Asn Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Thr Thr Ser Gly Tyr Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val
 100 105 110

Thr Val Ser Ser
115

<210> 38
<211> 108

<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Murine 1A6 VL Domain
consensus sequence of Light Chain K Subgroup I (HumKI)

<400> 38
Asp Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser Val Thr Pro Gly
1 5 10 15
Asp Ser Val Ser Leu Ser Cys Arg Ala Ser Gln Ser Ile Ser Asn Asn
20 25 30
Leu His Trp Tyr Gln Gln Lys His Ser Glu Ser Pro Arg Leu Leu Ile
35 40 45
Lys His Ala Ser Gln Ser Ile Ser Gly Ile Pro Ser Arg Phe Ser Gly
50 55 60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Ser Ile Asn Ser Val Glu Thr
65 70 75 80
Glu Asp Phe Gly Met Phe Phe Cys Gln Gln Ser Asn Ser Trp Pro Tyr
85 90 95
Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 39
<211> 93
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Human VH Domain
consensus sequence of Heavy Chain Subgroup III (HumIII)

<400> 39
Glu Val Gln Leu Val Glu Ser Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Phe Ser Trp Val
20 25 30
Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val Ala Ala Asp Ser Val
35 40 45
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asp Ser Lys Asn Thr Ala Tyr
50 55 60
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
65 70 75 80

Thr Thr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
 85 90

<210> 40
<211> 81
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Human VL Domain
 consensus sequence of Light Chain K Subgroup I (HumKI)

<400> 40
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 1 5 10 15

Asp Arg Val Thr Ile Thr Cys Trp Tyr Gln Gln Lys Pro Gly Lys Ala
 20 25 30

Pro Lys Leu Leu Ile Tyr Gly Val Pro Ser Arg Phe Ser Gly Ser Gly
 35 40 45

Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp
 50 55 60

Phe Ala Thr Tyr Tyr Cys Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
 65 70 75 80

Arg

<210> 41
<211> 116
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Murine 1A6 VH Domain
 consensus sequence of Heavy Chain Subgroup III (Humiii)

<400> 41
Glu Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Lys Pro Gly Ala
 1 5 10 15

Ser Leu Lys Leu Ser Cys Thr Ala Ser Gly Phe Asn Ile Lys Asp Thr
 20 25 30

Tyr Ile His Trp Met Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp Ile
 35 40 45

Gly Arg Ile Asp Pro Ala Asn Asp Asn Thr Ile Tyr Asp Pro Lys Val
 50 55 60

Gln Gly Lys Ala Thr Met Thr Ala Asp Thr Ser Ser Asn Thr Ala Tyr
 65 70 75 80

Leu Gln Leu Asn Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

Thr Thr Ser Gly Tyr Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val
 100 105 110

Thr Val Ser Ser
 115

<210> 42
<211> 108
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Murine 1A6 VL Domain
consensus sequence of Light Chain K Subgroup I (HumKI)

<400> 42
Asp Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser Val Thr Pro Gly
 1 5 10 15

Asp Ser Val Ser Leu Ser Cys Arg Ala Ser Gln Ser Ile Ser Asn Asn
 20 25 30

Leu His Trp Tyr Gln Gln Lys His Ser Glu Ser Pro Arg Leu Leu Ile
 35 40 45

Lys His Ala Ser Gln Ser Ile Ser Gly Ile Pro Ser Arg Phe Ser Gly
 50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Ser Ile Asn Ser Val Glu Thr
 65 70 75 80

Glu Asp Phe Gly Met Phe Phe Cys Gln Gln Ser Asn Ser Trp Pro Tyr
 85 90 95

Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys Arg
 100 105

<210> 43
<211> 116
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Humanized 1A6
(Hum19) VH Domain consensus sequence of Heavy Chain
Subgroup III (Humiii)

<400> 43
Glu Val Gln Leu Val Glu Ser Gly Gly Leu Val Gln Pro Gly Gly
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Ile Lys Asp Thr
 20 25 30

Tyr Ile His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
 35 40 45

Ala Arg Ile Asp Pro Ala Asn Asp Asn Thr Ile Tyr Ala Asp Ser Val
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Ser Asp Asp Ser Lys Asn Thr Ala Tyr
 65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
 85 90 95

Thr Ala Ser Gly Tyr Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val
 100 105 110

Thr Val Ser Ser
 115

<210> 44
<211> 108
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Humanized 1A6
(Hum19) VH Domain consensus sequence of Light Chain K
Subgroup I (HumKI)

<400> 44
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
 1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Ser Ile Ser Asn Asn
 20 25 30

Leu His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
 35 40 45

Tyr His Ala Ser Gln Ser Ile Ser Gly Val Pro Ser Arg Phe Ser Gly
 50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
 65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ser Asn Ser Trp Pro Tyr
 85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg
 100 105

<210> 45
<211> 93
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Human VH Domain
consensus sequence of Heavy Chain Subgroup III (Humiii)

<400> 45

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Glu | Val | Gln | Leu | Val | Glu | Ser | Gly | Gly | Gly | Leu | Val | Gln | Pro | Gly | Gly |
| 1 | | | | | 5 | | | | | 10 | | | 15 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Leu | Arg | Leu | Ser | Cys | Ala | Ala | Ser | Gly | Phe | Asn | Phe | Ser | Trp | Val |
| | | | | | | | | 20 | | 25 | | | | 30 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Arg | Gln | Ala | Pro | Gly | Lys | Gly | Leu | Glu | Trp | Val | Ala | Ala | Asp | Ser | Val |
| | | | | | | | | 35 | | 40 | | | 45 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Lys | Gly | Arg | Phe | Thr | Ile | Ser | Arg | Asp | Asp | Ser | Lys | Asn | Thr | Ala | Tyr |
| | | | | | | | | 50 | | 55 | | | 60 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Leu | Gln | Met | Asn | Ser | Leu | Arg | Ala | Glu | Asp | Thr | Ala | Val | Tyr | Tyr | Cys |
| | | | | | | | | 65 | | 70 | | 75 | | 80 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|
| Thr | Arg | Trp | Gly | Gln | Gly | Thr | Leu | Val | Thr | Val | Ser | Ser | | | |
| | | | | | | | | 85 | | 90 | | | | | |

<210> 46

<211> 81

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Human VL Domain
consensus sequence of Light Chain K Subgroup I (HumKI)

<400> 46

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Ile | Gln | Met | Thr | Gln | Ser | Pro | Ser | Ser | Leu | Ser | Ala | Ser | Val | Gly |
| 1 | | | | | 5 | | | | | 10 | | | 15 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Asp | Arg | Val | Thr | Ile | Thr | Cys | Trp | Tyr | Gln | Gln | Lys | Pro | Gly | Lys | Ala |
| | | | | | | | | 20 | | 25 | | | 30 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Pro | Lys | Leu | Leu | Ile | Tyr | Gly | Val | Pro | Ser | Arg | Phe | Ser | Gly | Ser | Gly |
| | | | | | | | | 35 | | 40 | | | 45 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ser | Gly | Thr | Asp | Phe | Thr | Leu | Thr | Ile | Ser | Ser | Leu | Gln | Pro | Glu | Asp |
| | | | | | | | | 50 | | 55 | | | 60 | | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Phe | Ala | Thr | Tyr | Tyr | Cys | Phe | Gly | Gln | Gly | Thr | Lys | Val | Glu | Ile | Lys |
| | | | | | | | | 65 | | 70 | | 75 | | 80 | |

Arg

<210> 47

<211> 753

<212> DNA

<213> Artificial Sequence

```

<220>
<223> Description of Artificial Sequence: Synthetic nucleotide
      sequence of Humanized scFv3 (Hum3)

<400> 47
cgaaccatgg gcgatatacca gatgacccaa tctccgtcta gcctgagcgc cagtgttgg 60
gatcgaggta ccattacttg ccgcgccagc caatctatca gtaataatct tcactggat 120
caacaaaaac cggtaaaggc tccgaaacctt ctatcaaac acgcctctca gagcattagc 180
ggcggtccga gccgcttctc tggctctggc tcgggcacgg actttaccct taccatcagc 240
tcttcggcgc cggaaagactt tgccacctat tattgtcagc agtctaatacg ctggccgtat 300
accttcggcgc aaggtaacaa ggtcgagatt aagcgcggcg gtggcggtc tggtggcggt 360
ggtagcggtg gcggtggatc cggtggcggt ggcagcgaag ttcaacttgt tgagtctgg 420
ggcggtctgg tttagccggg tggctctctg cgcctgtctt ggcagcaag cggttcaac 480
attaaggaca cctacatcca ttggatgagg caagctccgg gtaagggtct ggagtgggtg 540
gcacgtatcg acccgccaaa cgacaacacc atttacgatc cgaaggtgca gggccgttt 600
actatgtctg cggacacacc taagaacacc gcgtacccctc agatgaactc tctgcgtgcc 660
gaggacacccg cctacta ctgcacgacc tctggctact ggttgccta ctggggccag 720
ggcacgttg tcaccgtctc ttctggtaa ccc                                753

<210> 48
<211> 61
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
      AVL-1

<400> 48
cgaaccatgg gcgatatacca gatgacccaa tctccgtcta gcctgagcgc cagtgttgg 60
g                                61

<210> 49
<211> 72
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
      AVL-2

<400> 49
gtgaagatata ttactgatag attggctggc gcgcaagta atggtaactc gatcaccaac 60
actggcgctc ag                                72

<210> 50
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
      AVL-3

```

<400> 50
ctatcagtaa taatcttac tggtatcaac aaaaaccggg taaagctccg aaacttctta 60
tctatcacgc c 71

<210> 51
<211> 68
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide AVL-4

<400> 51
cccgagccag agccagagaa gcggctcgga acgcccgtaa tgctctgaga ggcgtgatag 60
ataagaag 68

<210> 52
<211> 70
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide AVL-5

<400> 52
ctctggctct ggctcgggca cggactttac ctttaccatc agctctttc agccggaaga 60
ctttgccacc 70

<210> 53
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide AVL-6

<400> 53
ccttgaccga aggtatacgg ccagctatta gactgctgac aataataggt ggcaaagtct 60
tccggc 66

<210> 54
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide AVL-7

<400> 54
gtatacccttc ggtcaaggta ccaagggtcga gattaagcgc ggcgggtggcg gttctggtgg 60

cggtggttagc g

71

<210> 55
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
AVL-8

<400> 55
cgaaccatgg gcgatatcca gatgacccaa tc

32

<210> 56
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
AVL-9

<400> 56
cggatccacc gccacccgcta ccacccgcac cag

33

<210> 57
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
AVH-1

<400> 57
ggtgtggcggtg gatccgggtgg cggtggcagc gaagttcaac ttgttgagtc tgggtggcggt 60
ctggttcagc cgg

73

<210> 58
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
AVH-2

<400> 58
gtccttaatg ttgaaaccgc ttgctgcgca agacaggcgc agagagccac ccggctgaac 60
cagaccgcca c

71

<210> 59
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide AVH-3

<400> 59
ggtttcaaca ttaaggacac ctacatccat tgggtgaggc aagctccggg taagggtctg 60
gagtgggg 67

<210> 60
<211> 76
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide AVH-4

<400> 60
ggcccttcac gctgtcagcg taaatggtgt tgtcgttgc cgggtcgata cgtgccaccc 60
actccagacc cttacc 76

<210> 61
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide AVH-5

<400> 61
cgctgacagc gtgaagggcc gttttactat ttcttagcgac gactctaaga acaccgcgtta 60
ccttcagatg aactctctgc g 81

<210> 62
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide AVH-6

<400> 62
ccagtagcca gagtccgtgc agtagtagac ggcggtgtcc tcggcacgca gagagttcat 60
ctgaagg 67

<210> 63
<211> 65

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide AVH-7

<400> 63
ggactctggc tactggtttg cctactgggg ccagggcacg cttgtcaccg tctcttctgg 60
ttaac 65

<210> 64
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide AVH-8

<400> 64
ggtggcggtg gatccgg 18

<210> 65
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide AVH-9

<400> 65
gggttaacca gaagagacgg 20

<210> 66
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide BVH-6

<400> 66
ccagtagcca gaggccgtgc agtagtagac ggccgtgtcc tcggcacgca gagagttcat 60
ctgaagg 67

<210> 67
<211> 65
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
BVH-7

<400> 67
ggcctctggc tactggtttg cctactgggg ccagggcacg cttgtcaccg tctcttctgg 60
ttaac 65

<210> 68
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
CVH-5

<400> 68
cgctgacagc gtgaagggcc gtttactat ttctggcgcac gactctaaga acaccgcgta 60
cttcagatg aactctctgc g 81

<210> 69
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
CVH-6

<400> 69
ccagtagcca gaggtcgtgc agtagtagac ggccgtgtcc tcggcacgca gagagttcat 60
ctgaagg 67

<210> 70
<211> 65
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
CVH-7

<400> 70
gacctctggc tactggtttg cctactgggg ccagggcacg cttgtcaccg tctcttctgg 60
ttaac 65

<210> 71
<211> 67
<212> DNA
<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic oligonucleotide
DVH-6

<400> 71
ccagtagcca gaggtcgtgc agtagtagac ggccggtgtcc tcggcacgca gagagttcat 60
ctgaagg 67

<210> 72
<211> 65
<212> DNA
<213> Artificial Sequence

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DVH-7

<400> 72
gacctctggc tactggtttg cctactgggg ccagggcacg cttgtcaccg tctcttctgg 60
ttaac 65

<210> 73
<211> 76
<212> DNA
<213> Artificial Sequence

<220>
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EVH-4

<400> 73
ggccctgcac ctccggatcg taaatggtgt tgtcggttc cgggtcgata cgtgccaccc 60
actccagacc cttaacc 76

<210> 74
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
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EVH-5

<400> 74
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ccttcagatg aactctctgc g 81

<210> 75
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
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GVL-3

<400> 79
ctatcagtaa taatcttcac tggtatcaac aaaaaccggg taaagctccg aaacttctta 60
tcaaacacgc c 71

<210> 80
<211> 68
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
GVL-4

<400> 80
cccgagccag agccagagaa gcggctcgga acgcccctaa tgctctgaga ggcgtgaaag 60
ataagaag 68

<210> 81
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
GVH-5

<400> 81
cgctgacagc gtgaagggcc gtttactat ttctgcggac gactctaaga acaccgcgt 60
ccttcagatg aactctctgc g 81

<210> 82
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
GVH-6

<400> 82
ccagtagcca gaggtcgtgc agtagtagac ggcggtgtcc tcggcacgca gagagttcat 60
ctgaagg 67

<210> 83
<211> 65
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
GVH-7

<400> 83
gacctctggc tactggtttgcctactgggg ccagggcacgttgtcaccgtctcttctgg 60
ttaac 65

<210> 84
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
HVL-3

<400> 84
ctatcagtaataatcttacatggtatcaacaaaaaccgggtaaagctccgaaacttctta 60
tcaaacacgc c 71

<210> 85
<211> 68
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
HVL-4

<400> 85
cccgagccaggccagagccagagaa gcggctcgga acgcccgtaa tgctctgaga ggcgtgaaag 60
ataagaag 68

<210> 86
<211> 76
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
HVH-4

<400> 86
ggccctgcaccttcggatcg taaatggtgttgctcgatcgatccgtgccaccc 60
actccagacc cttacc 76

<210> 87
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
HVH-5

<400> 87
cgatccgaag gtgcaggggcc gttttactat ttctgcggac gactctaaga acaccgcgta 60
ccttcagatg aactctctgc g 81

<210> 88
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
HVH-6

<400> 88
ccagtagcca gaggtcgtgc agtagtagac ggccgtgtcc tcggcacgca gagagttcat 60
ctgaagg 67

<210> 89
<211> 65
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
HVH-7

<400> 89
gacctctggc tactggtttg cctactgggg ccagggcacg cttgtcacccg tctcttctgg 60
ttaac 65

<210> 90
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
IVL-3

<400> 90
ctatcagtaa taatcttacat tggttatcaac aaaaaccggg taaagctccg aaacttctta 60
tcaaacacgc c 71

<210> 91
<211> 68
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
IVL-4

<400> 91
cccgagccag agccagagaa gcggctcggaa acgcccgtaa tgctctgaga ggcgtgaaag 60
ataagaag 68

<210> 92
<211> 76
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
IVH-4

<400> 92
ggccctgcac cttcggatcg taaatggtgt tgtcgttgc cgggtcgata cgtgccaccc 60
actccagacc cttacc 76

<210> 93
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
IVH-5

<400> 93
cgatccgaag gtgcagggcc gtttactat gtctgcggac acctctaaga acaccgcgta 60
ccttcagatg aactctctgc g 81

<210> 94
<211> 67
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic oligonucleotide
IVH-6

<400> 94
ccagtagcca gaggtcgtgc agtagtagac ggccgtgtcc tcggcacgca gagagttcat 60
ctgaagg 67

<210> 95
<211> 65
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic oligonucleotide
IVH-7

<400> 95

gacctctggc tactggtttg cctactgggg ccagggcacg cttgtcaccg tctcttctgg 60
ttaac 65

<210> 96

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic Linker
peptide

<400> 96

Gly Gly Gly Gly Ser Gly Gly Gly Ser Gly Gly Gly Ser Gly
1 5 10 15Gly Gly Gly Ser
20



Creation date: 10-23-2003

Indexing Officer: SFOLTZ - STEVE FOLTZ

Team: OIPEBackFileIndexing

Dossier: 09910483

Legal Date: 09-25-2001

| No. | Doccode | Number of pages |
|-----|---------|-----------------|
| 1 | A... | 2 |

Total number of pages: 2

Remarks:

Order of re-scan issued on